Patient Reactance as a Moderator of the Effect of Therapist Structure on Posttreatment Alcohol Use*

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ABSTRACT. Objective: We sought to replicate findings about the effect of therapist-imposed structure on alcoholism-treatment effectiveness for aftercare patients at different levels of interpersonal reactance and to examine if the effect generalizes to patients in a primary phase of treatment. **Method:** Analyses were based on ex post facto observer ratings combined with outcome data from a randomized clinical trial. Participants had alcohol abuse or dependence (N = 247) and received treatment at either a primary outpatient treatment site (n = 125) or an aftercare site (n = 122) of Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity). Patients' trait reactance and therapist structure were assessed via observer ratings based on videotaped therapy sessions. Dependent variables included percentage days abstinent, percentage heavy-drinking days, time to first drinking day, and time to first heavy-drinking day throughout a 1-year posttreatment period. **Results:** The results indicated that increased therapist structure during aftercare treatment predicted fewer abstinent days and more heavy-drinking days for persons at a high level of reactance than for persons at a low level of reactance. The effect was a consistent predictor of alcohol use throughout each 3-month interval within the follow-up period. The interaction effect was not supported in the primary outpatient treatment sites, and it was not supported as a predictor of time to first drink or time to first heavy drink in either the aftercare or the outpatient sites. **Conclusions:** This study successfully replicated the finding that level of patient reactance appears to moderate the effect of therapist structure on alcohol-use outcomes in aftercare treatment settings. The lack of support for this effect in primary outpatient treatment settings suggests that the negative effect of structured treatment may be limited to patients who are further along in the recovery process. (*J. Stud. Alcohol Drugs* **70:** 929-936, 2009)

THE STYLE IN WHICH THERAPISTS deliver behavioral treatment for alcoholism has increasingly been the focus of empirical research in recent years (Karno et al., 2002; Moyers and Martin, 2006; Moyers et al., 2005). The body of evidence emerging from this research suggests that what therapists do during therapy sessions influences the effectiveness of treatment (Karno and Longabaugh, 2007; Miller et al., 1993). Although, on one hand, one might expect such findings, they are notable given the research community's difficulty identifying differences in effectiveness across treatment types as well as its difficulty identifying treatments that are indicated or contraindicated for particular patients (Project MATCH Research Group, 1997a,b; UKATT Research Team, 2008). Thus, the examination of therapist behaviors during alcohol treatment appears to be yielding valuable information for the field.

One particular aspect of therapist behavior that has garnered attention is the level of therapist directiveness. Directiveness is defined as the extent to which a therapist assumes a more or less active role in guiding a patient through the therapy process (Beutler et al., 1991). A previous examination of psychotherapy treatment studies suggested that the effect of directive treatments was moderated by the level of patients' reactance (i.e., the tendency to resist being influenced by others [Brehm and Brehm, 1981]) (Beutler and Clarkin, 1990; Beutler et al., 2000). Nondirective interventions seemed to yield better outcomes for individuals who generally did not accept external influence, whereas directive interventions appeared to be more effective for patients who did accept external influence (Beutler and Clarkin, 1990). The implication of these findings was that the effectiveness of psychotherapy could be enhanced by appropriately matching the amount of influence the therapist imposes on treatment sessions to the level of openness to being influenced exhibited by patients.

Although directiveness has been characterized as a unidimensional construct in the general psychotherapy literature, in the area of alcohol research it has been identified as a multidimensional construct that can be seen to incorporate confrontation (Karno and Longabaugh, 2005a; Miller et al., 1993), structure (Karno and Longabaugh, 2005a), and advice giving (Miller et al., 2003). Among these aspects of directiveness, the role of structure in affecting treatment outcomes may be of particular importance. In recent research, Karno and Longabaugh (2005a,b) examined the level of therapist-imposed structure (e.g., initiating topics and providing information) delivered at a single clinical research unit of the Project MATCH (Matching Alcoholism Treatments to Client Heterogeneity) clinical trial.

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They observed partial support for the interaction between the level of therapist structure and the level of patient reactance as a predictor of posttreatment alcohol use. The nature of the effect was such that for patients at medium or high levels of reactance, structure had a negative impact on treatment effectiveness. For those individuals, high levels of therapist structure were associated with fewer abstinent days and more heavy-drinking days in the year following treatment. For patients low in reactance, the level of therapist structure was not associated with subsequent alcohol use. Thus, the results suggested that for patients beyond a certain level of reactance, therapist-led initiation of topics, teaching, and providing information were approaches associated with worse outcomes.

Although the results were promising, that study focused only on a single Project MATCH site. Given that within the Project MATCH study itself there were some site-level differences in observed Patient × Treatment interaction effects (Longabaugh and Wirtz, 2001; Project MATCH Research Group, 1997a), the identification of an interaction between therapist structure and patient reactance in only a single site does not provide definitive evidence for the effect. Also, the sample from that previous study comprised only patients who were in the aftercare arm of Project MATCH (i.e., their treatment was aftercare that immediately followed an inpatient or intensive outpatient treatment episode). Data were not yet available on therapy structure for patients who were in the outpatient arm of Project MATCH (i.e., their treatment was the primary treatment episode). Thus, it could not be determined if the effect of structure on treatment outcomes generalized to primary treatment episodes or was specific to aftercare settings.

The current study expands on previous work to examine the effect of therapist structure on treatment effectiveness among patients at different levels of reactance. The first aim of the study is to replicate the previously observed Structure × Reactance interaction effect in a second aftercare clinical research unit of Project MATCH. Following from previous results, we hypothesize that, in this replication, increased therapist structure will be associated with worse drinking outcomes for patients at medium or high levels of reactance and that this effect will differ from patients low in reactance. The second aim of the study is to determine if the interaction effect generalizes to participants in the outpatient arm of Project MATCH. We hypothesize a similar interaction effect will be observed for the outpatient participants as is hypothesized for the aftercare participants.

Method

Participants

The sample (N = 247) comprised participants from the Houston aftercare site (n = 122) and three outpatient sites (Albuquerque, NM; West Haven, CT; and Farmington, CT) (n = 125) from the Project MATCH clinical trial. For the present study, participants from the Houston Clinical Research Unit (CRU) were designated as an aftercare replication sample and participants from the outpatient sites were designated as a generalizability sample. All participants met criteria for an alcohol-use disorder according to Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revised, criteria (American Psychiatric Association, 1987). Inclusion criteria for participants included attending at least one treatment session and providing a minimum of 240 days (of a possible 1 year) of posttreatment follow-up data on alcohol use.

A random sample of participants from these aftercare and outpatient CRUs was selected. The sample sizes were determined based on an a priori power analysis using an effect size estimate previously found in the Providence CRU for the Structure × Reactance interaction effect. In the Providence CRU, the interaction effect had been found to be of medium size (partial η^2 = .056, which corresponded to an effect size f = 0.24) (Karno and Longabaugh, 2005a).

Demographic characteristics. The aftercare sample was 12% women, 65% white, 23% black, 11% Hispanic, and 1% other race and had a mean (SD) age of 41.0 (10.0) years. The outpatient sample was 25% women, 79% white, 4% black, 13% Hispanic, and 4% other race. The average age for the outpatient sample was 39.9 (10.1) years.

Drinking levels before treatment. On average, the aftercare sample reported 21% (0.26%) days abstinent in the 90 days before the intensive treatment that preceded Project MATCH, with 76% (0.27%) heavy-drinking days. The outpatient sample reported 32% (0.30%) days abstinent before the Project MATCH treatment, with 62% (0.31%) heavy-drinking days.

Independent variables

Trait psychological reactance. Psychological reactance was measured via observer ratings using the 25-item Trait Reactance Scale from the Systematic Treatment Selection Clinician Rating Form (Fisher et al., 1999). These ratings were conducted based on observing the first treatment session. Two observers independently rated each patient and the total score was averaged across the observers. This measure examines the extent to which patients are reluctant to relinquish control in interpersonal situations. Examples of items include "usually follows the advice of others" and "is happiest when he or she is in charge." The scale has demonstrated good interrater reliability (κ = .80; Fisher et al., 1999). In the present sample, observer agreement was measured by calculating the percentage of items in which both observers selected the same rating for each patient. On average, observers' responses matched exactly on 71% and 69% of the items for patients in the aftercare and outpatient CRUs, respectively.

Patients were categorized into low-, medium-, and high-reactance groups using cutoff scores derived from all available ratings on outpatient and aftercare participants (N = 399 inclusive of data for additional participants from the Providence CRU). The total sample was divided into thirds to yield cutoff scores for the low-reactance group (score < 3.25), the medium-reactance group (score between 3.25 and 6.0), and the high-reactance group (score > 6.0). A categorical variable was created to facilitate interpretation of statistical interaction terms (in particular because the therapist structure variable was treated as a continuous score) and to provide clinical guidelines that can be more readily translated into practice. The use of three categories was chosen to reduce similarity between the low- and high-reactance groups, thereby increasing the likelihood of observing group differences.

For the aftercare site, the distribution of cases across the low-, medium-, and high-reactance groups was 38.5% (n = 47), 36.9% (n = 45), and 24.6% (n = 30), respectively. For the outpatient sites, the distribution of cases in the low-, medium-, and high-reactance groups was 33.6% (n = 42), 36.8% (n = 46), and 29.6% (n = 37), respectively. The low-, medium-, and high-reactance groups were comparable in terms of sociodemographic variables (gender, age, ethnicity, and education) and clinical variables (alcohol involvement, alcohol symptom count, psychopathology, and social support). There were no significant differences between the aftercare and outpatient samples in terms of either reactance scores ratings (p > .90) or the distribution of participants to the reactance groups (p > .60).

Therapist structure. Therapist structure was measured using the Therapy Process Rating Scale (Fisher et al., 1995). Independent raters responded to two 5-point Likert-scale items after viewing a segment of treatment on videotape. By design, the raters assigned to rate structure for a given case were never the same raters that had rated reactance for that case. The two structure items assessed the extent to which the therapist provided information or instruction to the patient and the extent to which the therapist introduced topics or initiated a change in topics. Scores across all rated segments were averaged to obtain a single indicator of therapist structure.

In the aftercare sample, scores ranged from 1.76 to 4.22, with a mean of 3.18 (0.51). Among outpatients, structure scores ranged from 2.00 to 4.44, with a mean of 3.43 (0.40). The structure ratings were negatively skewed (skewness [SE] = -0.39 [.15]), and a square root transformation was used that reduced the skewness to -.05 [.12] for the combined aftercare and outpatient sample. No significant difference was observed between the outpatient and the aftercare arms on the structure variable (p > .5).

In previous research (Karno and Longabaugh, 2005a), a third structure item was included that measured the use of closed-ended questions. In the present study, analyses that included the item on closed-ended questions did not yield results supportive of any of the study's hypotheses for either the aftercare or the outpatient samples. Subsequent item-level analysis revealed that the ratings of closed-ended questions correlated highly and positively with ratings of open-ended questions. Because open-ended questions are not thought to reflect structure, the high correlation shed doubt on whether the closed-ended question item was itself a good indicator of structure. Re-analysis of the Structure × Reactance interaction in the sample reported by Karno and Longabaugh (2005a) indicated that the interaction effect remained a predictor of alcohol use when the item on closed-ended questions was excluded. In response to these findings, the current study excluded the item about closed-ended questions. Interrater reliability for the two-item structure measure remained very good, with the average intraclass correlation > .80.

Sampling of treatment sessions for therapy structure ratings

Videotape therapy sessions of the Project MATCH treatments were the source material for the ratings of therapist structure. Ratings were conducted on the first, second, third, and final therapy sessions for each patient. Some participants attended fewer than four sessions of treatment, and, on average, approximately three sessions were rated for each patient in the study. Extensive rater training and reliability checks for the patient reactance and therapist structure ratings were maintained throughout the entire study. Ratings of structure across sessions were moderately correlated (average r = .46, range: .28-.64). Specific details regarding tape segment sampling and rater training and qualifications can be found in a previous publication (Karno and Longabaugh, 2003).

Dependent variables

Percentage days abstinent. Alcohol-use frequency was assessed as the percentage of days abstinent (PDA) from alcohol during the first year after treatment. PDA for each 90-day period following treatment was measured in Project MATCH via the Form 90 (Miller, 1996). PDA was negatively skewed and an arcsine transformation was conducted to approximate a normal distribution.

Percentage heavy-drinking days. Heavy-alcohol-use frequency was assessed as the percentage of heavy-drinking days (PHDD) during the year after treatment. Consistent with National Institute on Alcohol Abuse and Alcoholism guidelines (Allen, 2003), a heavy-drinking day for men was defined as a day in which five or more standard drinks are consumed. For women, a heavy-drinking day was defined as a day during which four or more standard drinks are consumed. These data were positively skewed and a square-root transformation was performed.

Days to first drink and to first heavy drink. Time to drink was calculated as the number of days into the posttreatment follow-up period when a participant drank any alcohol and when they consumed five or more standard drinks for men or four or more standard drinks for women. Although not all participants stayed in treatment for the entire 12-week period, days to first drink and to first heavy drink were uniformly counted beginning 12 weeks after the start of treatment. This method permitted direct comparison of all participants irrespective of when they may have stopped coming to treatment.

Data analysis

Analysis of covariance (ANCOVA) using SPSS Version 16.0 (SPSS, Inc., Chicago, IL) was used to test for the Structure × Reactance interaction in the aftercare and the outpatient sites as a predictor of alcohol use across the year following treatment. To minimize the number of statistical tests, the analyses tested a three-way interaction effect for Therapist Structure × Patient Reactance × Sample Arm (aftercare vs outpatient). This approach allowed for the aftercare and outpatient samples to be included in the same analysis and for a formal test of the difference between samples in the Structure × Reactance interaction effect. The analysis controlled for baseline alcohol use. Separate analyses were conducted for the dependent variables PDA and PHDD.

Repeated measures ANCOVA was then used to determine the stability of the interaction effect across each of the four 3-month follow-up time intervals that comprised the 1-year follow-up. Cox regression analyses were used to examine the Structure × Reactance interaction as a predictor of days to first drink and days to first heavy drinking after the 12-week treatment phase. Analyses were conducted using two-tailed tests with critical $\alpha = .05$.

Completeness of data

A total of 129 participants were initially selected from the aftercare sample, but 4 patients did not have a recorded treatment session available, and 3 did not have 240 days of follow-up drinking data. Thus, the final sample size was 122. Among outpatients, 142 participants attended one or more treatment sessions and provided outcome data. However, eight patients did not have a recorded treatment session available, and nine patients had less than 240 days of posttreatment drinking data. Thus, the final outpatient sample size was 125.

Results

Analyses indicated that the effect of the interaction between patient reactance and therapist structure on both PDA and PHDD differed across study arms. This finding was supported by a significant three-way interaction involving those patients who were in the low- and high-reactance groups (for model predicting PDA: *B* [SE] = -1.93 [0.85], $p < .05$, partial $\eta^2 = .02$; for model predicting PHDD: *B* = 1.33 [0.59], $p < .05$, partial $\eta^2 = .02$). The summary of results for the analyses is shown in Table 1, and the nature of the interaction as a predictor of PDA in the aftercare and the outpatient arms is shown in Figures 1 and 2. In the analysis with PHDD as the dependent variable, the nature of the interaction was comparable to that observed for PDA. We therefore do not present separate figures for the PHDD model.

As can be seen in Figures 1 and 2, therapist structure had a larger differential impact on PDA across patients in the low- and high-reactance groups in the aftercare arm than in the outpatient arm. Visual inspection of Figure 1 suggests that, in the aftercare arm, increasing levels of therapist structure were associated with a worse outcome

TABLE 1. Summary of analysis of variance for interaction of therapist structure by patient reactance across study arms predicting percentage days abstinent (PDA) and percentage heavy-drinking days (PHDD) in the first year after treatment ($N = 247$)

	Between-subjects effects					
	PDA			PHDD		
Source	df	*F*	partial η^2	df	*F*	partial η^2
Baseline alcohol use	1	36.01‡	.13	1	22.79‡	.09
Arm, outpatient vs aftercare	1	7.19†	.03	1	6.60*	.03
Structure	1	0.31	<.01	1	0.01	<.01
Reactance	2	0.38	<.01	2	0.05	<.01
Structure × Reactance	2	0.46	<.01	2	0.08	<.01
Arm × Reactance	2	2.38	.02	2	2.27	.02
Structure × Arm	1	6.58*	.03	1	6.25*	.03
Structure × Reactance × Arm	2	2.68[a]	.02	2	2.53[a]	.02
Error		234			234	

[a] $p < .05$ for the difference in the effect of structure for the low- and high-reactance groups across the outpatient and the aftercare arms.
*$p < .05$; †$p < .01$; ‡$p < .001$.

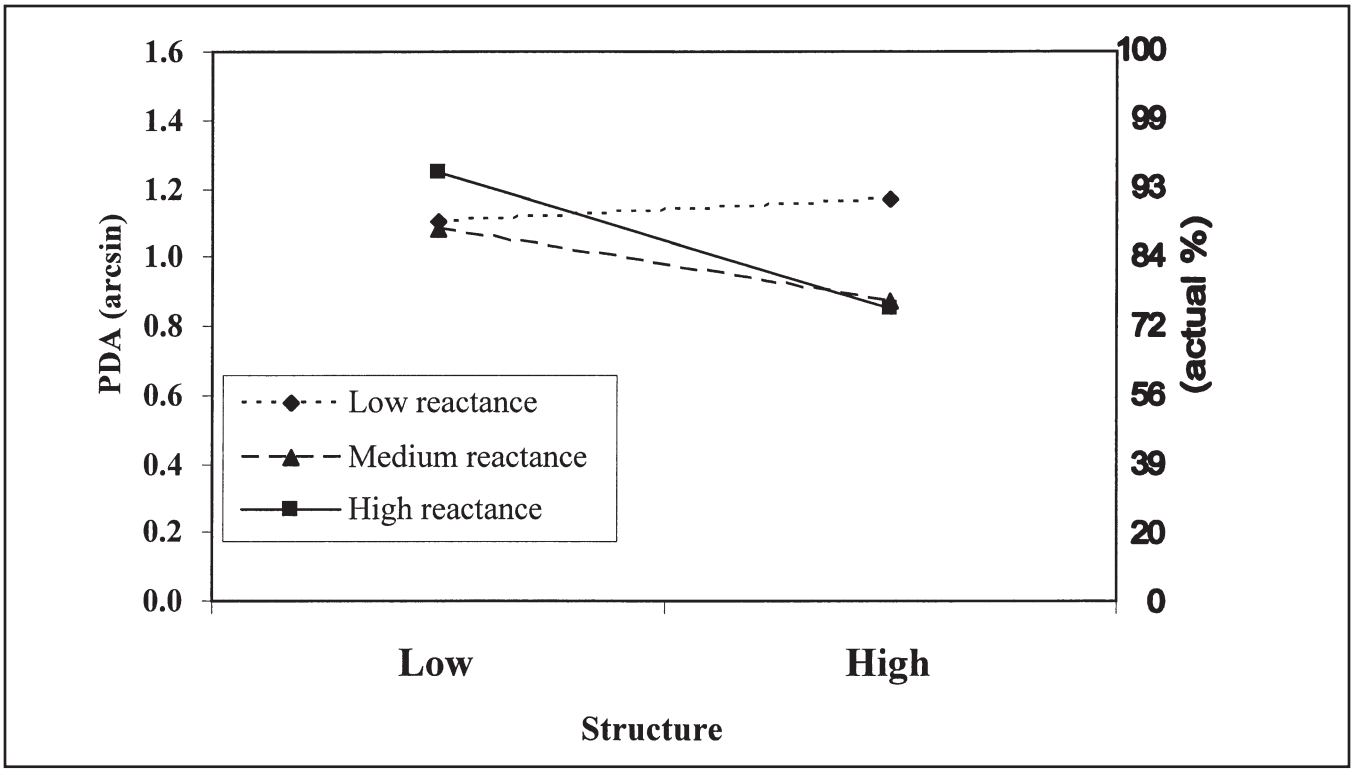

FIGURE 1. Interaction between therapist structure and patient reactance as a predictor of 1-year posttreatment percentage of days abstinent (PDA) in the aftercare arm. For purpose of illustration, values used for high and low structure were the mean ± 1 SD, respectively. Arcsin = an arcsine transformation of the dependent variable PDA (n = 122).

for high-reactance patients than for low-reactance patients, whereas, in the outpatient arm (Figure 2), increased therapist structure was not associated with outcomes for either group of patients.

Parameter estimates from the model supported these visual impressions. The test of the interaction effect between patient reactance (comparing the low- and high-reactance groups) and therapist structure in the aftercare arm was statistically significant (for model predicting PDA: B = 1.37 [0.55], $p < .05$, partial $\eta^2 = .03$; for model predicting PHDD: B = -0.78 [0.38], $p < .05$, partial $\eta^2 = .02$). For the aftercare sample there was a significant negative effect of structure on posttreatment alcohol use for those patients in the high-reactance group (for model predicting PDA: B = -1.15 [0.40], $p < .01$, partial $\eta^2 = .03$; for model predicting PHDD: B = 0.68 [0.28], $p < .05$, partial $\eta^2 = .025$). For patients in the low-reactance group there was no observed effect of structure on alcohol use.

The Structure × Reactance interaction effect was not significant for patients in the outpatient arm ($p > .20$), nor was there a significant relationship between level of structure and alcohol-use outcomes for patients at any level of reactance.

Other results from the analyses of covariance indicated that there were differences between the outpatient and the aftercare arms in posttreatment PDA (F = 7.19, 1/234 df, $p < .01$) and PHDD (F = 6.60, 1/234 df, $p < .05$). Patients in the outpatient arm had fewer abstinent days and more heavy-drinking days after treatment than did patients in the aftercare arm. Additionally, the interaction between therapist structure and study arm was a significant predictor of PDA (F = 6.58, 1/234 df, $p < .05$) and PHDD (F = 6.25, 1/234 df, $p < .05$). Therapist structure had a more negative effect overall for patients in the aftercare arm than for patients in the outpatient arm.

Results from the repeated measures analysis of covariance suggested that the observed effects were consistent across each of the 3-month intervals that comprised the 1-year posttreatment follow-up period. The tests to determine if the three-way interaction effect among patient reactance, therapist structure, and study arm on PDA and PHDD varied over time were not significant ($p > .60$). Also, the tests for time effects on the Structure × Reactance interaction for only those participants in the aftercare arm were not significant ($p > .50$).

Results from the time-to-event analyses indicated that the three-way interaction among patient reactance, therapist structure, and study arm was not a significant predictor of either time to first drink or time to first heavy-drinking day during the follow-up period ($p > .15$). The two-way interaction between patient reactance and therapist structure

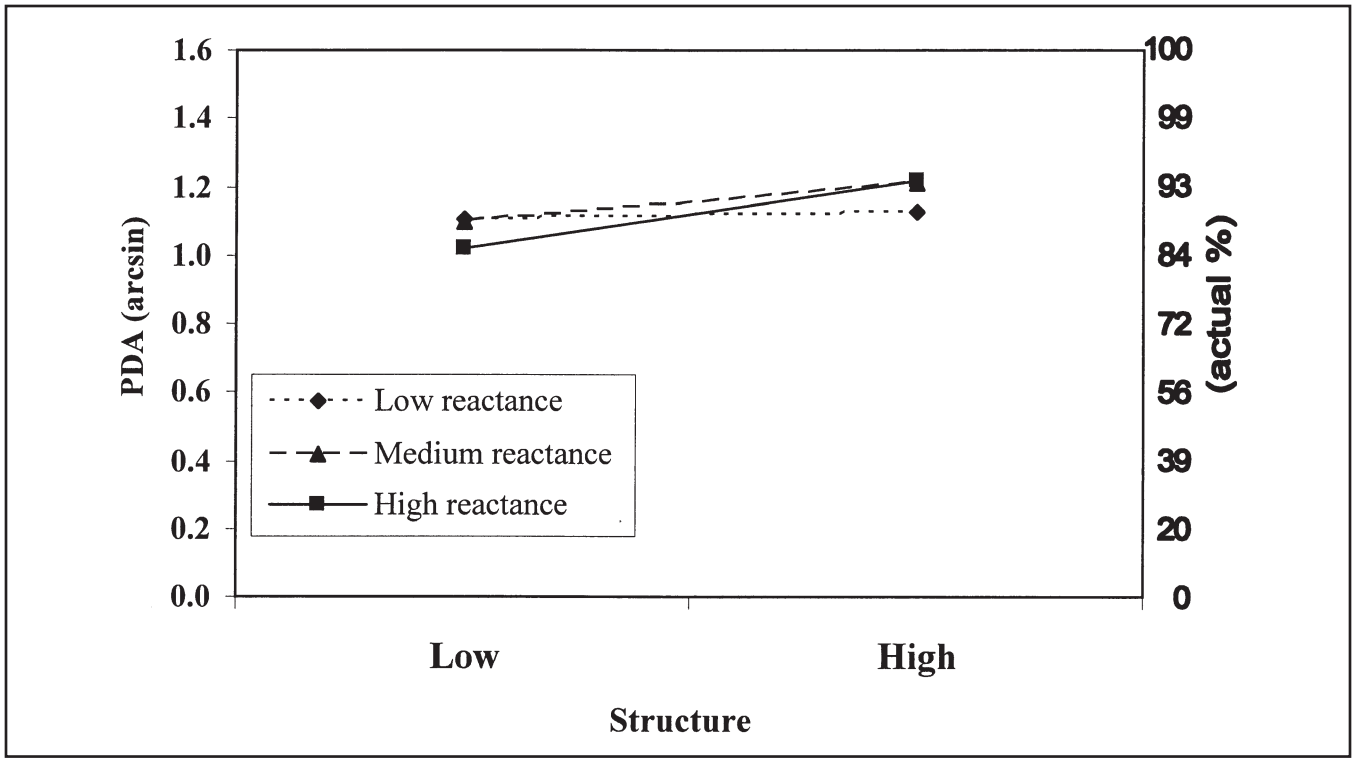

FIGURE 2. Interaction between therapist structure and patient reactance as a predictor of 1-year posttreatment percentage of days abstinent (PDA) in the outpatient arm. For purpose of illustration, values used for high and low structure were the mean ± 1 SD, respectively. Arcsin = an arcsine transformation of the dependent variable PDA (n = 125).

among those participants in the aftercare arm was also not a predictor of time to first drink ($p > .35$) or time to first heavy-drinking day ($p > .15$).

Discussion

The current study suggests that when behavioral treatment for alcoholism follows an earlier, intensive-treatment episode (i.e., aftercare), the level of therapist structure differentially impacts posttreatment alcohol use for patients at different levels of interpersonal reactance. Specifically, for patients in the aftercare arm of Project MATCH who were high in reactance, increased therapy structure was associated with fewer abstinent days and more heavy-drinking days in the year after treatment. The negative effect of structure shrank incrementally for patients in the medium- and low-reactance groups, yet there remained an overall negative main effect of structure for the aftercare sample. These effects did not predict the timing of when patients first consumed alcohol after treatment.

These results closely mirror previous findings based on a separate sample of patients from the aftercare arm of Project MATCH (Karno and Longabaugh, 2005a). The present findings are, therefore, notable given that not only has the field of alcoholism treatment research had limited success in identifying patient attributes that moderate treatment effectiveness (Project MATCH Research Group, 1997a,b; UKATT Research Team, 2008), but also the replication of such effects in an independent sample rarely occurs.

Findings for the outpatient sample did not support our hypothesis that patients' reactance level would moderate the effect of therapist structure on their alcohol-use outcomes. The Structure × Reactance interaction effect failed to predict any outcome variable for the outpatient sample. Further, the findings supported the conclusion that the nature of the interaction effect differed markedly for the outpatient sample compared with the aftercare sample. These findings raise the question about why aftercare and outpatient samples differ regarding the roles that therapist structure and patients' reactance play in affecting treatment outcome.

With the present study, we can begin the effort to understand these group differences. Looking first to the distribution of reactance scores in the aftercare and the outpatient samples, it is apparent that there were no meaningful differences in the levels of reactance in the two samples. Additionally, uniform criteria were used to assign individuals from both samples to the reactance groups. Thus, it seems unlikely that differences in observed effects would be attributed to differences in reactance scores.

What does stand out in the current study is the evidence

for the differential effect of structure on PDA and PHDD across the aftercare and the outpatient samples. This Structure × Arm interaction was included in our analysis as part of testing the three-way interaction among structure, reactance, and study arm, and therefore we did not have an a priori hypothesis for that effect. Yet the data indicate that structure was generally less helpful for participants in the aftercare sample than it was for participants in the outpatient sample. This difference in the usefulness of structure across the two samples may well play an important role in understanding why the Structure × Reactance interaction was present only for the aftercare sample.

Based on the current findings, we speculate that patients entering a primary treatment episode expect and are more receptive to treatment structure than patients beginning an aftercare treatment episode. This higher expectation for structure by outpatients may serve to offset certain patients' tendency to resist being influenced by others. Thus, in the context of an outpatient sample, the negative effect of structure originally hypothesized for patients at increased levels of reactance might be mitigated by expectancies about the nature of treatment.

In contrast to the outpatient sample, patients in the aftercare sample have already completed a primary treatment episode and have advanced to continuing care. It seems reasonable to hypothesize that these patients may expect lower amounts of structure than their outpatient counterparts. As the structure increases relative to the expectations of the aftercare patients, those individuals predicted to respond negatively (e.g., those high in reactance) then show the worst treatment outcomes.

Somewhat surprisingly, this area of study is still in its infancy and more work is needed. As a starting point, the roles of treatment context and expectancies seem to be viable candidates in understanding the pattern of results in the present study. They may prove to be important areas for future research on the effects of structure in alcohol treatment.

In the particular context of aftercare treatment, the current study has important implications for clinical practice. The data suggest that therapists who treat alcohol-use disorders in those settings are generally advised to avoid high levels of teaching, providing information, and controlling what topics are discussed. These suggestions appear especially important when working with reactant patients, and hence it may be worthwhile to measure reactance as part of an intake assessment. Although the present study used observer-based ratings of reactance for research purposes, validated self-report measures of reactance are available that can be incorporated into a standard intake assessment battery (e.g., see Dowd et al., 1991; Hong, 1992; Hong and Page, 1989).

A critique of this study yields strengths and limitations. Among the limitations, it is important to acknowledge that the current study is correlational and observational, not experimental. We have taken advantage of existing research resources from Project MATCH to conduct post hoc ratings of patients and treatment and to pair that information with existing outcome data. In the absence of a randomized clinical trial in which therapist structure is experimentally manipulated, it would be inappropriate to assert causal influences between these variables of interest. Also, we lack the data on patients' expectations about treatment structure that would permit us to empirically test our leading explanatory theory for why we observed the Structure × Reactance interaction only in the aftercare sample. Such work will need to follow in a subsequent study.

Significant strengths of the study are its focus on replication of treatment effects in an independent aftercare sample and its efforts to test for generalizability to an outpatient sample. Although the study failed to support the generalizability of the effect with outpatient samples, that failure offers heuristic value in triggering the search to identify important distinctions between treatment-seeking samples.

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